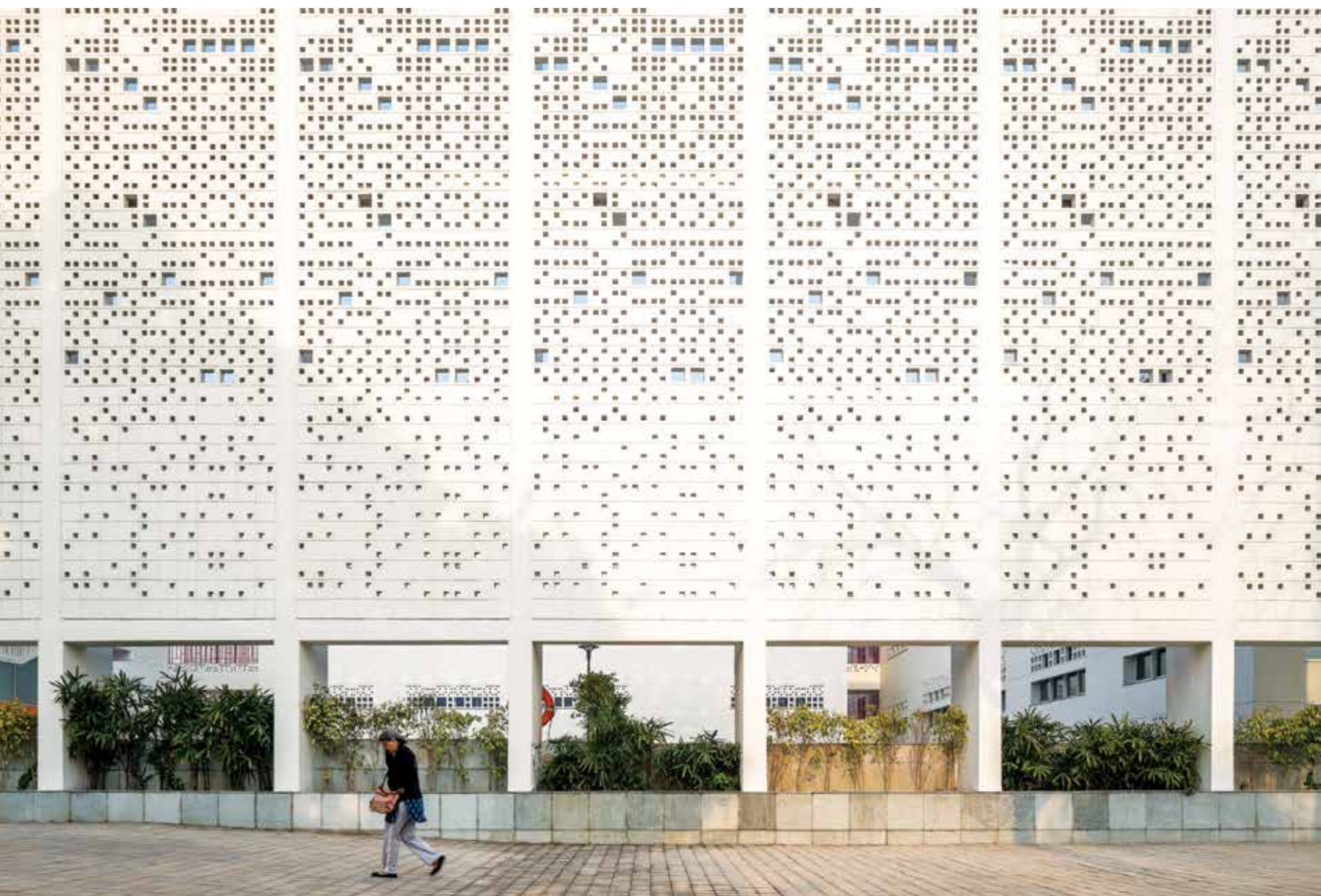


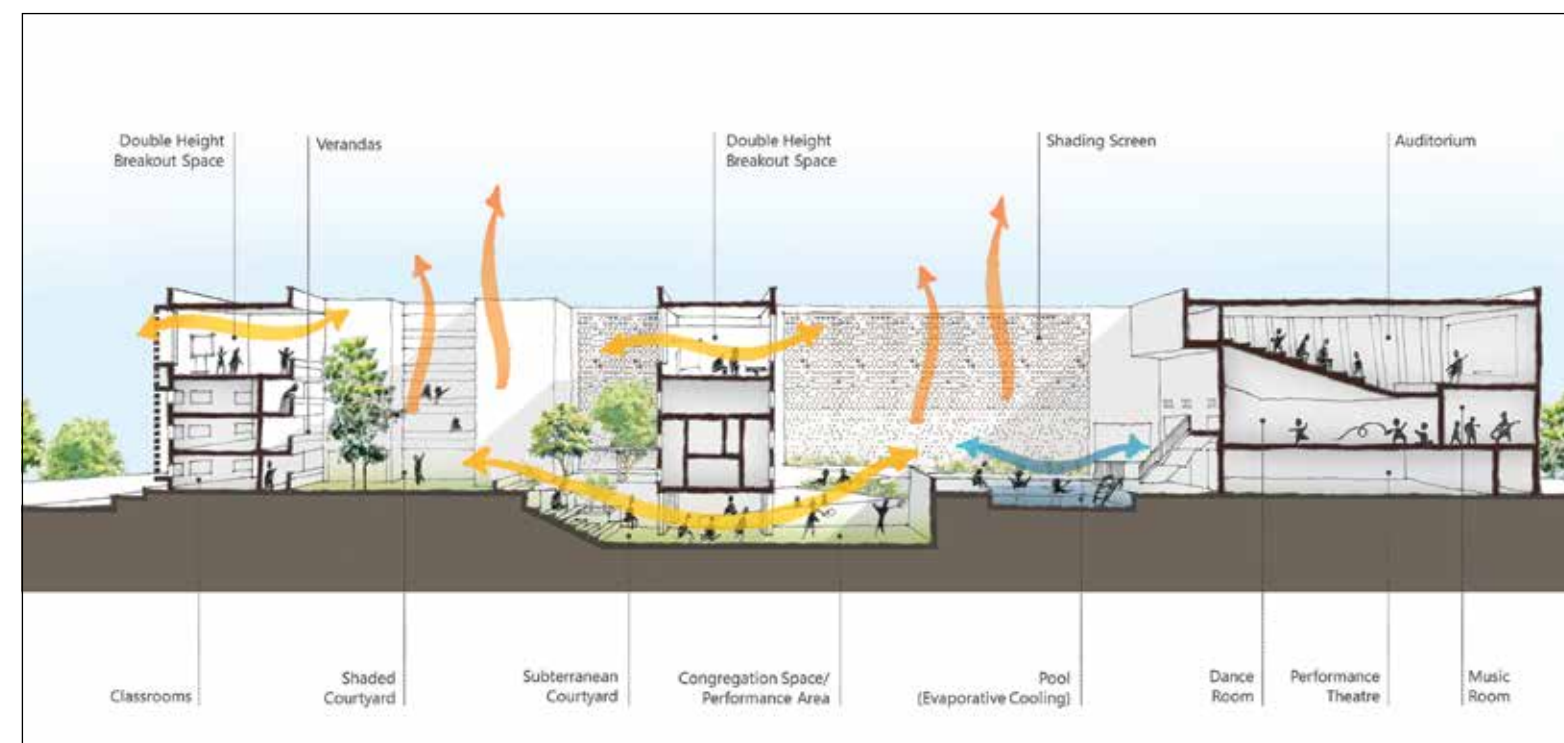
*A look to the future.*







The British School, New Delhi



The British School - Schematic Sectional View



## THE FUTURE OF THE INSTITUTIONAL SPACE

Ar. Sonali Rastogi,  
Founding Partner,  
Morphogenesis, New Delhi.

institutions nurture our value systems and therefore, they must demonstrate sustainability and instil a certain respect for the environment within children while they are still young and malleable.

**We're moulded by our** educational institutions. Schools act as incubators and serve three primary interests: knowledge development, inculcation of social skills and provision of day-care. With the disruption in normal functioning of schools due to the onset of the pandemic, the spaces for physical activity and social interaction have become constrained.

There is an urgent need to investigate alternative solutions to establish resilient and robust educational campuses. Solutions that are sustainable and environmentally conscious. Institutional spaces need to be more pliable and must introduce passive design strategies along with innovative proposals, that could help us address the current challenges. We need to design resilient buildings that can serve as exemplars for a responsible existence on earth.

Institutions nurture our value systems and therefore must demonstrate sustainability and instill a certain respect for the environment within children, while they are still young and malleable. At Morphogenesis, we focus on five essential aspects that would, henceforth, become the cornerstones for good institutional design.

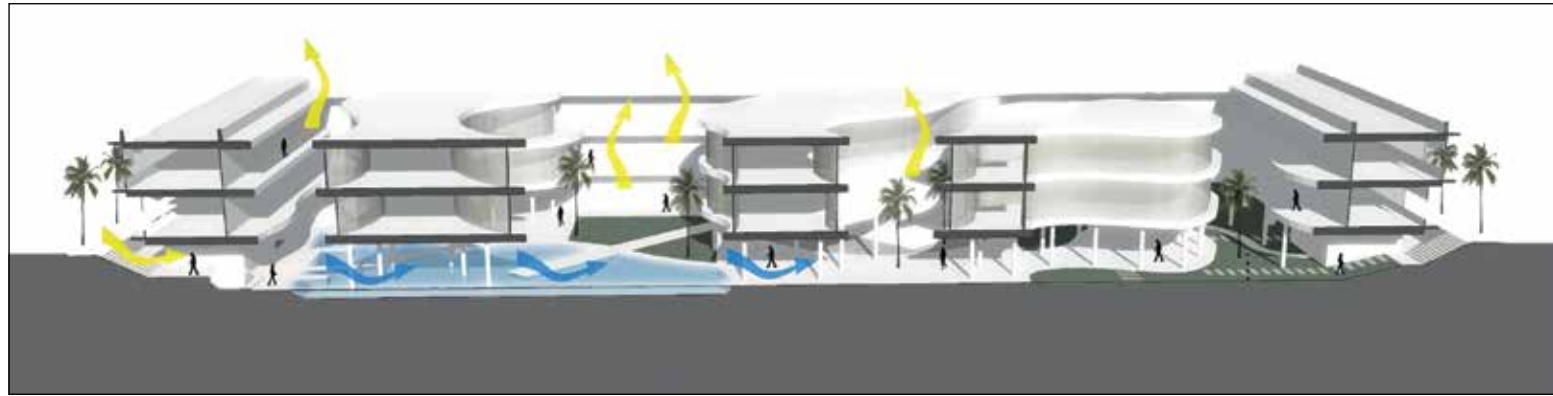
### De-densification

Institutions need to focus on de-densification of classrooms, as and when required. Modularity is the key to generating spaces that are reconfigurable and open to interpretation. The British School, New Delhi, features semi-enclosed breakout spaces that are liberally scattered. These multi-functional spaces are sheltered from the top and allow ample daylight and fresh air to enter through the porous *jaalis*. This is a decongestion technique that provides a well-ventilated alternative to walled classrooms.



The British School - Shaded Circulation & Break-Out Spaces





Pearl Academy - Underbelly Sectional View

In India, given our significantly large school-going population, most classrooms are filled up to the brim. To increase the active learning space per student, we must introduce staggered timetables. While allowing for de-congestion, such staggered schedules would extend the building usage cycle. Therefore, we must look at workdays that are 10-12 hours long, instead of the usual 6-8 hours.

Additionally, spaces like gyms, cafeterias, and assembly halls, along with spaces meant for other creative pursuits, can be adapted and used as additional classrooms whenever the need arises.

#### Re-conceptualizing amenities

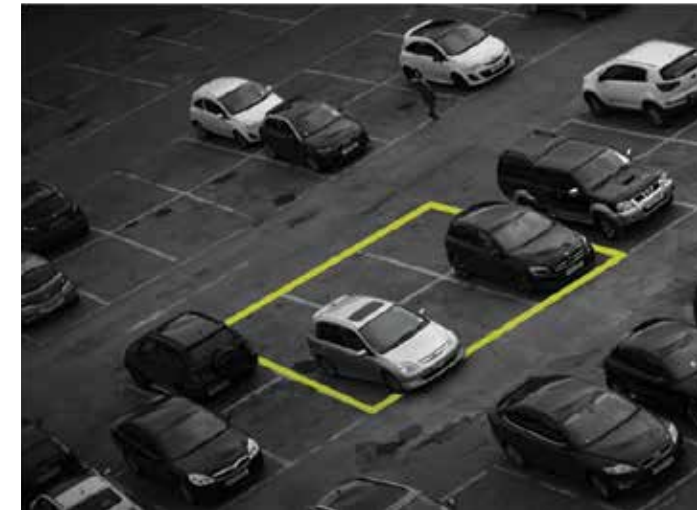
Architects and designers need to rigorously ideate and offer solutions that can help reduce the risk of contamination through high-touch surfaces. Within our buildings, we need to reduce contact surfaces and increase well-ventilated areas that have a high air-exchange rate. We must entirely let go of doors within restroom and toilet clusters. Even water filling stations would need to be re-conceptualized and adapted for a touchless environment. Furthermore, we need to employ highly sanitizable materials with antibacterial properties, like linoleum instead of traditional carpets and rugs.

#### Passive design strategies

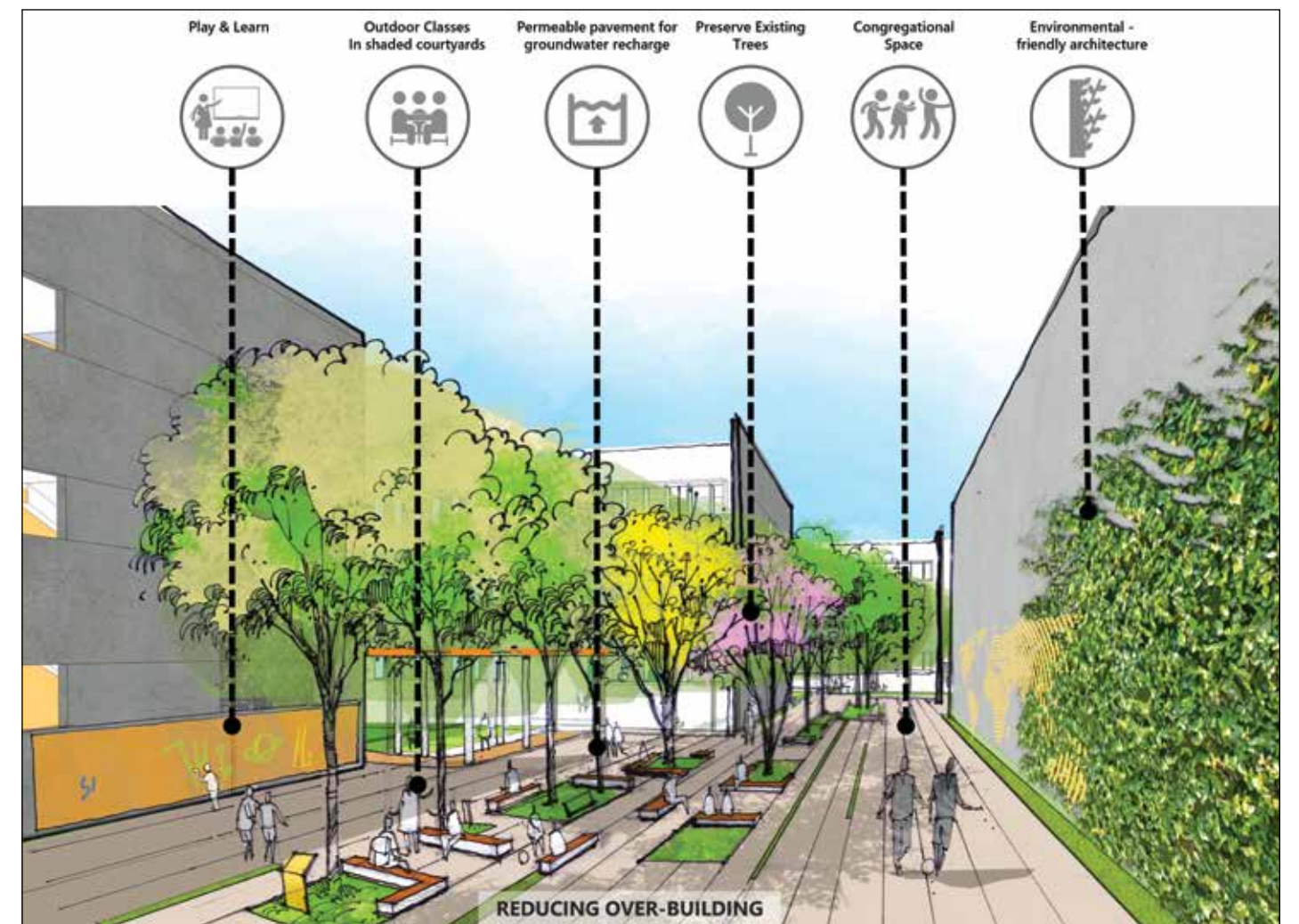
Most traditional Indian architecture is well suited to its context and optimizes daylight and ventilation. The contemporary trend of designing hermetically sealed buildings creates a heavy dependency on mechanical solutions like air-conditioning and artificial lighting. We need to turn our attention back towards traditional wisdom and focus on the internal functionality of spaces rather than their external appearance. Institutional architecture in India needs to re-employ the use of courtyards and singly-loaded corridors, staples within vernacular architecture, to ensure the provision of abundant daylight and cross-ventilation. These courtyards within clusters are shaded for most part of the day and are the most appropriate solutions for the Indian climate. With the use of operable windows, along with carbon sequestration on campuses, we can almost eliminate the requirement for air-conditioning.

At the Pearl Academy, in Jaipur, we created an underbelly derived from a traditional *baoli* which uses earth sheltering, thermal banking and evaporative cooling to modulate surrounding temperatures. The climate analysis for this region showed that at a depth of three meters, the ground temperature equals the average temperature of the region, which is about 25°C (77° F). This, along with evaporative cooling, achieves stable temperatures of about 27°C (81° F) inside the structure without the use of air conditioning, even when outside temperatures are upto 20°C (68°F) higher.

Pearl Academy, Jaipur © Edmund Sumner



By using the Miyawaki technique we can create a mini-forest consisting of 300 trees within 6 car parking slots



Vidyashilp Academy - Central Vista

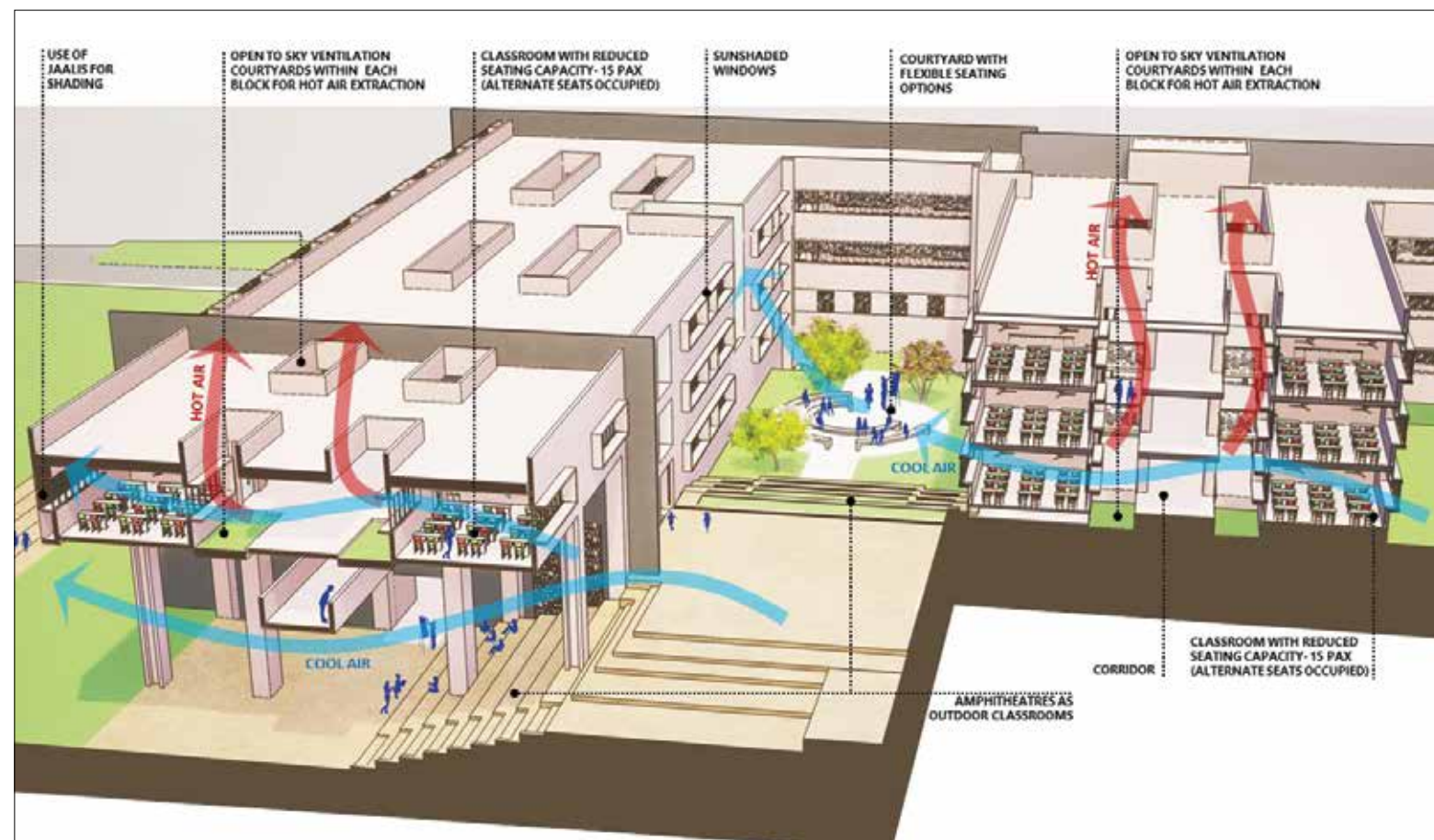
#### Environmental awareness

The impact of environmental greens must be impressed upon the minds of our upcoming generations. Through carbon sequestration, we can mitigate climate change to a certain extent through the reduction of atmospheric carbon dioxide. This can be done by planting dense tree clusters that enrich the green cover and provide shaded break-out spaces with oxygen-rich fresh air. Using the Miyawaki method, we can plant many native trees closely within a small pit. For instance, we can plant a cluster of 300 trees within a space occupied by just 6 car parking slots. This

technique will create mini forests that regulate the temperature and create controlled micro-climates that are conducive to outdoor teaching.

At Vidyashilp Academy, in Bengaluru, while being mindful of retaining approximately 700 trees on site, the building blocks were organized around the central green axis of existing teak trees. Essentially, these break-out spaces are an extension of the learning experience outside the classroom, under the shade of tree groves, and is reminiscent of the age-old *guru-shishya* tradition.





Vidyashilp Academy - section through the built form

Similarly, at The Lalit Suri Hospitality Institute, in Faridabad, we integrated the built mass with the existing Neem tree clusters. The built form actively engages and intertwines with the beautiful tree clusters by moving back and forth, as required.



The Lalit Suri Hospitality Institute - Neem Tree Clusters

### Towards a net-zero future

Institutional landscape design will focus on demonstrating circular economies, thereby allowing students to experience a sustainable eco-system. Schools need to be net zero on waste, i.e., no by-products should be sent to landfills. A 'farm to fork' model would allow students to absorb the idea that the environment is an extension of themselves. They can learn to plant, harvest, consume, and then compost, thereby creating a sustainable cycle.

### Conclusion

It is imperative to take climatic specifications and socio-cultural contexts into consideration before designing an institutional building. Though project briefs are getting increasingly 'global,' our response needs to be deeply rooted in the 'local.' At Morphogenesis, these considerations have resulted in the formulation of our copyrighted design process S.O.U.L.© 2019, an acronym for Sustainable, Optimized, Unique and Liveable. We sincerely believe, now more than ever, that our S.O.U.L. philosophy would be the appropriate model for institutions in the future.

- Sustainable: Through demonstrative sustainability and environmental impact, we need to prepare a generation that has immense respect for the world they inherit and feel a sense of ownership towards it. This will be possible through appropriate passive design, effective ventilation, and carbon sequestration. The idea is to achieve a low carbon footprint for a truly sustainable future.
- Optimized: Increasing the number of modular spaces that are open to interpretation and can be activated at will. Institutions in the future would need numerous decentralized spaces because modularity leads to reconfigurability.
- Unique: Projects need to respond to their local context. Special attention should be paid to vernacular methods of construction, incorporating local techniques, crafts, and materials. Earthen pot insulation, earth berming, and cooling ponds impart a distinct identity to the building, whilst tackling aspects of natural ventilation and cooling. Moreover, we need to involve the local communities within the design process to ensure that growth is truly inclusive. At Pearl Academy, Jaipur, the local potters and *jaali* makers found employment on site for a year as mechanical and synthetic insulation was replaced with traditional *matkas*, moulded by hand.
- Liveable: Microclimate creation and placemaking within schools, and colleges, would lead to healthier spaces and more fulfilling lives. With methods like Miyawaki plantation and urban terrace farming, we can create greener campuses that balance well-lit and ventilated classrooms with a sufficient amount of shaded outdoor spaces. ifj



Matkas (earthen pots) used at the site

